

CLAIMS

1. A method of manufacturing a group III-V crystal, characterized in comprising: a step of depositing a metal film on a substrate; a step of
5 heat-treating the metal film under an atmosphere in which a patterning compound is present; and a step of growing a group III-V crystal on the post-heat-treated metal film.

2. A method of manufacturing a group III-V crystal, characterized in comprising: a step of depositing a metal film on a substrate; a step of
10 heat-treating the metal film under an atmosphere in which a patterning compound is present; a step of growing a group III-V compound buffer film on the post-heat-treated metal film; and a step of growing a group III-V crystal on the group III-V compound buffer film.

3. A group III-V crystal manufacturing method as set forth in either
15 claim 1 or 2, characterized in that holes or grooves formed in the metal film by the heat-treating of the metal film under an atmosphere in which a patterning compound is present have an average width of 2 nm to 5000 nm, and the aperture fraction, being the percentage of the surface area that the holes or grooves occupy with respect to the substrate total surface area, is 5% to 80%.

20 4. A group III-V crystal manufacturing method as set forth in any of claims 1 to 3, characterized in that the substrate is silicon, sapphire, SiC, ZrB₂, or a group III-V compound.

5. A group III-V crystal manufacturing method as set forth in any of

claims 1 to 4, characterized in that the metal film contains titanium or vanadium.

6. A group III-V crystal manufacturing method as set forth in any of claims 1 to 5, rendering the thickness of the metal film 10 nm to 1000 nm.

5 7. A group III-V crystal manufacturing method as set forth in any of claims 1 to 6, characterized in that the heat treatment is carried out at 800°C to 1200°C for 0.5 minutes to 20 minutes.

8. A group III-V compound crystal manufactured by a group III-V crystal manufacturing method as set forth in any of claims 1 to 7.

10 9. A group III-V compound crystal as set forth in claim 8, the III-V crystal being $\text{Ga}_x\text{Al}_y\text{In}_{1-x-y}$ ($0 \leq x \leq 1$ and $0 \leq y \leq 1$).